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New records and other notes on North Dakota plants*

O. A. STEVENS

The present paper is supplementary to Bergman's Flora of North Dakota (in Sixth Bien. Rept. Agr. Coll. Survey [1911-1912]. 1918) and, as such, will follow the same arrangement and nomenclature. The purpose is to record additional species, designated by a dagger (†), and other notes of special interest. During the years 1910 to 1920 I have had opportunity to visit nearly every part of the state and, incidental to economic work, to obtain many specimens of interest. Some of these were noted in the Flora and others have been reported by Lunell (Am. Mid. Nat. 4-6. 1917-1919). I have also included in the paper a few corrections which have come to notice and revised certain groups in which I have become especially interested. Where not otherwise stated, the specimens listed have been collected by myself.

LEPIDIUM RAMOSISSIMUM A. Nels. I do not know why Bergman reduced this to a synonym of *L. densiflorum* Schrad. The two species are very different and may be distinguished as follows:

L. densiflorum. Annual, stem usually simple below and with several long racemes above; basal and lower stem leaves serrate; pods distinctly margined and broadest toward the apex.

L. ramosissimum. Biennial, bushy branched from the base; basal and lower stem leaves pinnatifid, the lobes linear or oblanceolate; pods not margined above, elliptic in outline.

The following specimens belong to *L. ramosissimum*: Tower City, *Bergman* 870; Valley City, Aug. 13, 1912, (first year rosettes); Courtenay, June 20, 1911; Kensal, July 26, 1915, (rosettes, also flowering stems); Manfred, July 12, 1913; Sykeston, July 15, 1891, *Bolley*; Sheyenne, July 4, 1908, *Lunell*; Leeds, Aug. 1, 1912; Bathgate, July 22, 1892, *Lee*; Ganbetta; *Bell* 264; Rugby, *Bergman* 2611. This species is quite common throughout the central part of the state, growing about streets and dooryards rather than in fields. At Langdon on July 19, 1918, I noticed the rosettes of *L. ramosissimum* fairly covering

* Contribution from Department of Botany, North Dakota Agricultural College and Experiment Station.

the ground. In a dooryard at Courtenay the species grew mixed with *L. densiflorum*. The latter had racemes about 3 cm. long with numerous well-developed pods, while the plants of *L. ramosissimum* had only a few half-developed pods.

† LEPIDIUM DRABA L. Several years ago (Ann. Rept. North Dakota Exp. Sta. 22: 80. 1912) I called attention to the possibility of this being introduced in Turkestan alfalfa seed. On June 6, 1918, a flowering plant was sent me by Mr. H. A. Nelson of Ray. [A well established colony has since been found along the railroad track at Moorhead, Minnesota, May 22, 1921.]

† SISYMBRIUM LOESELII L. Determination verified by Paul C. Standley and specimens deposited in herbaria of the U. S. National Museum and the New York Botanical Garden.

Annual, 6-9 dm. high, sparingly hirsute with simple flattened hairs, these less abundant above but present on upper stems and pedicels; leaves runcinate, the terminal segment hastate and irregularly denticulate, lower stem leaves sometimes 1 dm. long; racemes becoming 3-4 dm. long, pedicels widely spreading one third to one half the length of the slender pods, which are ascending and about 3 cm. long with three-nerved valves.

Devil's Lake, July 15, 1920 (common about the streets); Tappen, July 12, 1919 (a single plant in the street; several in an old field of *Bromus inermis* Leyss. several years before). The description was drawn from the growing plants and specimens collected at Devil's Lake. The plant has somewhat the aspect of *Sophia intermedia* Rydb., but the leaves are quite different and the racemes are fewer but longer and coarser. The relative height of flowers and young pods mentioned by Koch and others seems scarcely distinctive. In this plant the pods do not surpass the flowers in normally developed racemes, but examples are frequent where they do so, apparently as a result of arrested development.

ERUCASTRUM POLLICHII Schimp. & Spenn. Park River, Aug. 8, 1913; Williston, Aug. 15, 1915; Oakes, July 18, 1919; Cooperstown, Aug. 25, 1919. This has now been found at many places, chiefly along the railroad tracks. The seeds have been identified in several samples of timothy and millet coming from near Grand Forks or a short distance north or south of this locality. The pods are not flattened, as stated in Bergman's key, but rounded, the valves with a rather prominent mid-nerve; racemes leafy bracted. The plants grow vigorously in late fall as shown by a flowering specimen collected at Fargo, Oct. 26, 1914.

MALVA VERTICILLATA L. I have not seen the specimen which Bergman referred to this species but am inclined to think that it was *M. borealis* Wallm., which is the common plant at Fargo and other places in the state. A specimen of what seems to be *M. crispa* L. † was sent by A. G. Sorlie, Grand Forks, Oct. 10, 1916.

EUPHORBIA ESULA L. Wahpeton, June 3, 1920, *Geo. P. Wolf*; Hazelton, July 15, 1919, in field of *Bromus inermis*; New Rockford, July, 1911, *J. R. Campbell*; Mona, June 5, 1914, *Albert Graves*; Ray, July 2, 1917, *H. A. Nelson*. In one field near Fargo patches are scattered over 20 acres. Apparently a bad weed, spreading by the roots. Time and manner of introduction unknown.

† *SILENE DICHOTOMA* Ehrh. Edgeley, July, 25, 1917, *Brenckle*; Langdon, July 19, 1918; Regent, July 20, 1916, *A. C. Goldtrap*. In timothy fields. Plants grown from seed proved to be coarse biennials larger than *S. noctiflora*.

† *SILENE FABARIA* (L.) Sibth. & Sm. Specimens determined by Paul C. Standley.

Biennial; glaucous, much branched, 6-9 dm. high. Basal and lowest stem leaves narrowed at the base, larger stem leaves ovate, sessile; flowering stems dichotomous with a flower in the fork, each branch with several remote clusters of three to seven flowers each. Flowers about 1 cm. wide, white, opening at night; petals cleft to the throat, not appendaged, the lobes oblanceolate, rounded at the apex; calyx indistinctly fifteen-ribbed, closely investing the ovate horny capsule, but not especially enlarged in fruit.

Venturia, July 16, 1919; Oakes, July 18, 1919. Lower stems and leaves with very much the aspect of *Vaccaria Vaccaria*. A specimen in the herbarium of Dr. J. F. Brenckle was collected at Kulm by him in 1916, and he states that he had found the plant there previous to that date. Apparently well established at Oakes and Venturia along roadsides. Dr. Standley writes that this is probably the first time it has been collected in this country.

† *LYCHNIS ALBA* Mill. Devil's Lake, July 13, 1920.

CHENOPODIUM

For several years I have been interested in *C. album* and related forms, especially in regard to seed characters. The plants are rather difficult to collect as the seeds are slow in maturing and the lower leaves are likely to be lost by the time the fruiting branches are well matured. With respect to the adherence of the pericarp it is to be noted that it rubs off more easily in fresh material.

In the fall of 1916 I collected twenty-six specimens in the vicinity of Fargo and submitted them to Dr. Standley, who determined them as follows:

- C. album* (4);
- † *C. paganum* Reichenb. (11);
- C. paganum*, approaching *C. album* (8);
- † *C. ferulatum* Lunell (3).

Apparently *C. paganum* is the commonest form here. I have not as yet been able to make much further progress in clearing up the relations of these forms but wish to offer what few notes I have.

C. ferulatum (which Standley notes is perhaps not sufficiently distinct from *C. album*) is separated by the fruiting calyx being open, exposing the fruit. While this does not seem to be quite constantly true for *C. ferulatum*, I find it also in a rather variable degree in the *C. album* specimens, being most prominent in well-matured plants. No. 11, determined as *C. paganum*, has calyces closed in specimen collected Aug. 25, but fruit from same plant collected in September shows them quite open. As to *C. paganum*, most of the plants were either so badly infested by an insect or so late in maturing that very little mature seed was obtained. From material at hand I would describe the seeds as follows:

- C. album*—1.2–1.4 mm. wide, upper surface flattened and with shallow, oblong pits (which show through the pericarp).
- C. paganum*—1.2–1.4 mm. wide, upper surface dull, neither flattened nor pitted.
- C. ferulatum*—1.2–1.4 mm. wide, similar to *C. paganum*.
- C. leptophyllum*—0.9 mm. wide, not flattened, smooth and shining.

The size of the seed of *C. paganum* is given by Standley (N. Am. Fl. 21: 21. 1916) as 1.3–2 mm. In one of the twenty-six specimens, a plant collected near the woods along the Red River, the seeds are variable in size, measuring 1.4–2 mm., but in all the others they are scarcely larger than those of *C. album*.

The three specimens of *C. ferulatum* differ among themselves. One, collected in an old garden (No. 3), which I take to be typical, is pale grayish green, simple below and with short branches above, the leaves oblong-rhombic with four or five short teeth on each side; another (No. 9, labelled by Standley as apparently a form of *C. ferulatum*) is bushy branched with narrow entire leaves. The third (No. 2) is in a rather advanced condition with lower leaves mostly fallen; the flowering branches

are unusually thick and dense and the seeds are pitted on the upper side. I am inclined to think it is a plant of *C. album* with an unusual amount of well-matured fruits and therefore with the spreading calyces unusually prominent.

The seeds of these species are described by Standley as "nearly smooth, black and shining" except in *C. ferulatum*, where they are said to be "puncticulate," but I find in our material that *C. album* has pitted seeds and *C. ferulatum* smooth (excepting as in No. 2 just noted; type material from Lunell also examined). The seeds of *C. leptophyllum* seem to be quite easily distinguished from those of the other common field species by their smaller size.

† CHENOPODIUM PRATERICOLA Rydb. Narrows, Aug. 12, 1913, Lunell.

† ATRIPLEX PATULA L. Wahpeton, Aug. 6, 1919. Along a street by buildings. Dr. Standley, who examined a specimen, writes that this species is perhaps only a form of *A. hastata* L., but we seem to have no other specimens which would be referred to this form.

† SUCKLEYA SUCKLEYANA (Torr.) Rydb. Belfield July, 4, 1914.

CORISPERMUM

Following Standley's treatment of this genus (N. Am. Fl. 21: 79-80. 1916) I would place our material as follows:

C. hyssopifolium L. Mandan, Wright 610.

† *C. nitidum* Kit. Sandhills near Anselm, Aug. 21, 1918.

† *C. villosum* Rydb. Sandhills near Anselm, Aug. 21, 1918; also all other specimens referred by Bergman to *C. hyssopifolium*, except Wright 610. The Fargo specimen of *C. villosum* was collected along the railroad (doubtless introduced in gravel) and no plants have been observed since. It was a well matured plant with very little pubescence except on the bracts. The Anselm plants are young, upright, rather slender, and densely pubescent.

POLYGONUM HYDROPIPER L. Hankinson, July 30, 1919. Lunell (Am. Mid. Nat. 5: 184. 1918) has referred the Ft. Ransom specimen to *P. punctatum leptostachyum* (Meisn.) Small, but it has dull akenes and flowers in the lower axils, as in *P. Hydro Piper*.

ASCLEPIAS SYRIACA L. Westfield, July 16, 1919. This does not seem to be common so far west. The specimen reported

by Bergman from Morton County (*Bell* 30) is undoubtedly *A. speciosa* Torr.; it is sterile but has the characteristic pointed leaves of that species. The specimen reported by Bergman as possibly a hybrid of the two species seems scarcely different from *A. syriaca*.

† ASCLEPIAS PUMILA (A. Gray) Vail. Mr. W. W. Eggleston has examined our material of *A. verticillata* L. and refers the following to *A. pumila*: Esther, *Bell* 542; Fleak, *Bell* 1370.

† ACERATES LANUGINOSA (Nutt.) DC. Janesburg, *Bell* 30, of Bergman's catalogue should be referred to this species instead of to *A. viridiflora* Ell.

† VERONICA MARITIMA L. Kongsberg, Sept. 1918, *Fred Schmidt, Jr.* A few plants in a grove of planted trees. Determined by F. W. Pennell.

CUSCUTA ARVENSIS Beyr. The Logan County record is by Brenckle, Aug. 18, 1912. We have also the following records: McLeod, *Bell* 385: Valley City, July 26, 1913; Enderlin, Aug. 20, 1918. Dr. T. G. Yuncker, who has examined portions of the Logan County and Valley City specimens, writes that he would call them *C. pentagona* Engelm. The other specimens seem to be the form which he calls *C. calycina* Engelm. The former were growing upon plants of the dry prairie, while the latter preferred those of riverbanks and similar localities.

CUSCUTA GRONOVII Willd. Fargo, Aug. 14, 1890, *Waldron*, is the only specimen which I consider typical. When preparing my paper on *Cuscuta* (*Am. Jour. Bot.* 3: 185-188. 1916) I was unable to find fresh material, but all that I have found at Fargo since that time agrees better with what I had called *C. plattensis* A. Nels. The habitat of *C. plattensis*, as stated by Nelson, hardly indicates this plant and I become doubtful of its identity. Dr. Yuncker writes me that an examination of the type of *C. plattensis* shows my plant to be quite different, although the description of the species as given by Nelson agrees. He refers my specimens to *C. Gronovii* var. *curta* Engelm. In a flax field at Ft. Ransom, where considerable damage was caused, this form and *C. Coryli* Engelm. were both present, sometimes separate and at others tangled together on the same host plant. The field was a small one next to the woods of the river.

PHLOX

Following the treatment of the western forms by E. Nelson (Ninth Rept. Wyoming Agr. College, 1899), our plants would seem to be separated more satisfactorily as follows:

Leaves 5-10 mm. long; flowering stems one-flowered. *P. Hoodii*.

Leaves 1-2 cm. long; flowering stems two-to several-flowered: more upright, the bark peeling off in shreds. *P. andicola*.

PHLOX ANDICOLA (Britton) E. Nelson. *P. Douglasii* of Bergman's Flora, in part. This seems to be better separated from *P. Hoodii* Rich. by the above characters than by the size of the flowers. The Medora and Washburn specimens referred by Bergman to *P. Douglasii* Hook. are evidently *P. Hoodii*.

† LAPPULA CENCHRUSOIDES A. Nels. Marmarth, July 4, 1918, in sandy soil of river valley. Habit of growth similar to *L. occidentalis* (Wats.) Greene, nutlets similar to those of *L. Lappula* (L.) Karst. but larger, the spines longer, and with a row of elongated tubercles on the middle of the back of the nutlets. The following, previously referred to *L. Lappula*, also belong here: Medora, *Bergman* 1276; same locality, June 19, 1910; Williston, *Bell* 25.

† LAPPULA CUPULATA FOLIOSA (A. Nels.) Nels. & Macbr. Marmarth, same as preceding. Often three of the nutlets of a flower have the spines confluent, forming a spreading border, the fourth nutlet with simple spines. In the specimens collected, however, there seems a decided tendency for the spines to be simple on all nutlets of the lower flowers. There are also nutlets with spines of intermediate form, broadened but not united. Counts on three plants show nutlets as follows:

Plant No. 1—80 united, 71 simple, 40 intermediate;

Plant No. 2—61 united, 106 simple, 34 intermediate;

Plant No. 3—47 united, 47 simple, 14 intermediate.

The color of the corolla is an uncertain character, white flowers often appearing bluish in the dried specimens.

† LAPPULA TEXANA HOMOSPERMA (A. Nels.) Nels. & Macbr. Marmarth, same as preceding, occasional plants in patches of *L. occidentalis*, all plants dried up and only fruits collected. From a planting of fruits the following season about twenty-five plants of *L. occidentalis* were obtained from fruits of that species. No plants were secured from the few fruits of the other two species.

† LAPPULA FLORIBUNDA (Lehm.) Greene. Lake Ibsen (Leeds) July 4 and 17, 1914, *Lunell*; Pleasant Lake, June 29, 1920.

† *CRYPTANTHA CALYCOSA* (Torr.) Rydb. Bowman, June 23, 1918, in loose burned clay around large boulders of the same material.

AMSINKIA MENZIESII (Lehm.) Nels. & Macbr. *A. intermedia* F. & M. Rugby, July 7, 1917, and July 27, 1918, a number of plants along the railroad track near the station; the first collection in flower, the second in fruit. Bergman's specimen from Pembina is evidently this species also, instead of *A. lycopsoides* Lehm.

† *LAMIUM AMPLEXICAULE* L. Langdon, July 18, 1918, a quantity in a dooryard.

† *DRACOCEPHALUM THYMIFLORUM* L. Belfield, July 4, 1914, several plants in a field of *Bromus inermis*. Several other introduced plants were also in the field: *Potentilla argentea* L., *Campanula sibirica* L., *Chrysanthemum Leucanthemum* L. and *Bromus tectorum* L. To be consistent with Bergman's nomenclature this plant should perhaps be referred to *Moldavica* but I have not thought it desirable to make such a change at this time. The plant is different in appearance from *D. parviflorum* Nutt., being slender and having very small flowers.

† *LYCOPUS COMMUNIS* Bicknell. Pleasant Lake, July 26, 1912, *Lunell*; Anselm, Aug. 29, 1920 (common in alder swamps). The Anselm plant has been verified by P. A. Rydberg.

† *SALVIA LANCEOLATA* Willd. In fields. Carrington, Aug. 27, 1919; Mandan, Sept. 13, 1920.

CHAMAERHODOS ERECTA (L). Bunge. This was included in the seventh edition of Gray's Manual, the record being apparently based on a specimen collected near Crookston, Minn. (Minnesota Bot. Studies 2: 584. 1901). I had thought that it might have been introduced in gravel as railroad ballast, but so far as I have been able to learn the locality mentioned is a gravel pit. It is probably one of the instances of a plains species occurring on the eastern edge of the Red River Valley. I have not seen the plant east of the hills along the Sheyenne River at Sheyenne and Valley City.

† *CRATAEGUS MOLLIS* T. & G. Fargo, May 26, 1917. One tree is in a thicket east of the fair grounds, and quite a number occur in a bend of the river two miles farther north.

† *MEDICAGO FALCATA* L. Oakes, July 18, 1919, a plant along the railroad tracks.

† *ASTRAGALUS PARVIFLORUS* (Pursh) MacM. Marmarth, July 3, 1918. Quite common on the higher parts of the hills.

† *HEDYSARUM* sp. Sentinel Butte, Aug. 0916, *Brenckle*, a single pod collected. Reported by Arthur (N. Am. Fl. 7: 450. 1921) as *H. cinerascens* Rydb.

† *EVONYMUS ATROPURPUREUS* Jacq. Owego, Sept. 1916, R. A. Shunk.

† *LOMATIUM MACROCARPUM* (Nutt.) Cov. & Rose. Dunseith, May 18, 1918, *Lunell*, and fruits collected at Minot in June, 1910, seem properly referred to this species.

† *SICYOS ANGULATUS* L. I have seen a specimen collected by A. H. Shunk along the Sheyenne River near Anselm.

† *CAMPANULA SIBERICA* L. Belfield, July 4, 1914, a single plant found in a field of *Bromus inermis*.

† *XANTHIUM PENNSYLVANICUM* Wallr. A specimen in the Gray Herbarium from Leeds, Aug. 21, 1902, *Lunell*, is referred by Millspaugh and Sherff (Field Mus. Nat. Hist. Bot. Ser. 4: 33. 1919) to this species. Some specimens of *Xanthium* collected along the river at Fargo in 1919, to show variations in burs, were determined by Sherff as *X. italicum* Mor. (*X. canadense* of the Flora) and *X. acerosum* Greene, † with the comment that the latter was perhaps not distinct.

† *CHRYSOETHAMNUS NAUSEOSUS* (Pall.) Britton. Williston, Aug. 11, 1915, on the hills along the Missouri River about fifteen miles southeast of the city. A plant of quite different appearance from *C. graveolens* (Nutt.) Greene, which is common there and on the buttes in the bad lands—the crown low, and with gray branches only 1–2 dm. long. This is the plant referred by *Lunell* (Am. Mid. Nat. 5: 41. 1918) at my suggestion to *C. formosus* Greene, but it evidently is not that species.

HELIANTHUS GIGANTEUS L. The form referred to in Bergman's Flora under this name is quite common in the central (and western?) part of the state, but I am as yet in doubt as to its status. It is evidently *Lunell's H. nitidus* (Am. Mid. Nat. 1: 235. 1914). Specimens from Valley City and New Rockford were determined by Standley as *H. tuberosus*. The Fargo specimens are *H. Maximiliani* Schrad.

HELIANTHUS GROSSE-SERRATUS Martens. The Fargo specimen of the Flora is certainly *H. Maximiliani*. The stem is only slightly hispid above and the leaves are broader and more nearly flat than usual. The Kenmare specimen (*Bergman 2744*) belongs to the preceding form.

† *MADIA GLOMERATA* Hook. Spring Brook, Aug. 17, 1915, a quantity in a prairie slough near the town.

† *ARTEMISIA PABULARIS* (A. Nels.) Rydb. Mandan, Sept. 11, 1920. Determined by Rydberg. There seems to be no other specimen among our material which resembles this. Mr. Thysell of the Northern Plains Station showed me the plants, only two places where they were growing being known.

† *SENECIO MANITOBENSIS* Greenman. Bottineau, July 8, 1917. Determined by J. Lunell. In the meadow of a dried up pond in the Turtle Mts.; Towner, July 13, 1911, *Lunell* (specimen in the Gray Herbarium).

† *CENTAUREA PICRIS* Pall. Spring Brook, Aug. 11, 1918. Determined by Standley. Received from Jacob Widman who referred to it as abundant in a field. Especially a few years ago the akenes were often found in Turkestan alfalfa seed, but this is apparently the first record of its having become established.

SONCHUS ARVENSIS L. Ellendale, July 24, 1919. Several spots around buildings in the town.

† *SONCHUS ULIGINOSUS* Bieb. *S. arvensis* of Bergman's Flora, Fargo, Aug. 1, 1916; Oakes, July 18, 1919; Crosby, June 7, 1919, *J. H. Phelps*; Williston, Aug. 1915. Specimens of this and of the preceding were examined by Standley, who stated that no North American specimens were in the U. S. National Museum collections. A specimen sent to the New York Botanical Garden was reported by Rydberg as apparently new to this country*. This seems rather strange in view of the fact that it is the common form through the Red River Valley, and westward in the northern part of North Dakota to somewhat beyond Devil's Lake, southern Manitoba, and western Minnesota. It is said to have first appeared at Portage Plains, Manitoba, about 1900.

This form differs from *S. arvensis* in the absence of glandular hairs on the upper stems and involucre. While I have not been able to compare carefully fresh material, I believe the heads are smaller, paler, and the rays more inclined to become recurved. Vegetative reproduction is by long horizontal roots and not rootstocks as commonly stated. The development of the terminal head is often stopped before flowering and several flowering branches arise just below it.

* Small has recently listed the species as an addition to the American flora, from Pennsylvania, where it was collected in 1921 (see *Torrey* 21: 100. 1922).

LACTUCA VIROSA L. Many European authors describe this as having horizontal leaves and black, broadly margined akenes. This does not apply to our plants. The pinnatifid-leaved form is only occasional in the state (Kulm, *Brenckle* 782; Bottineau, July 23, 1918; Fargo, Aug. 17, 1920). Pammel's notes (*Rhodora* 20: 180-181. 1918) on the replacement of the entire-leaved form by the pinnatifid in Iowa suggest that it will be interesting to watch for a similar case here.

† *CREPIS OCCIDENTALIS* Nutt. Bowman, June 23, 1918. Quite common on Twin Buttes.

† *CREPIS CAPILLARIS* Roth. Fargo, Aug. 26, 1920; Willow City, *F. M. Rich*.

† *SPIRODELA POLYRHIZA* (L). Schleid. Fargo, Aug. 30, 1919, a few plants among masses of *Lemna*.

† *CYPERUS DIANDRUS* Torr. Anselm, Aug. 1916, *R. A. Shunk*.

† *CYPERUS ESCULENTUS* L. Fargo, Oct. 2, 1920.

SCIRPUS VALIDUS Vahl. I cannot support Bergman's separation of most of our material as *S. occidentalis* (Wats.) Chase. There do seem to be two forms present, one with spikelets as figured in Gray's Manual (ed. 7, f. 290), the other with more rigid panicles and longer spikelets. The specimens, however, do not match Bergman's separation. Both of these forms were found in a small patch at Oakes on July 18, 1919, the first occupying a definite part of the patch. Specimens of each were identified by Agnes Chase as *S. validus*.

CAREX OBTUSATA Liljebe. Verified by Standley. Fargo, June 24, 1920. Quite abundant, at least in one place in low prairie. Kensal, *Bergman*, 1744, is also this in stead of *C. stenophylla* Wahlenb.

The following additional species of *Carex* were recorded by Lunell (Am. Mid. Nat. 3: 234-237. 1916) from specimens determined by Mackenzie: *C. Hookeriana* Dewey, *C. athrostachya* Olney, *C. tenera* Dewey, *C. praticola* Rydb., *C. Emoryi* Dewey, *C. scirpiformis* Mackenzie, *C. Parryana* Dewey, *C. laeviconica* Dewey and *C. atherodes* Spreng.

† *SYNTHESISMA SANGUINALE* (L.) Dulac. Fargo, Oct. 2, 1920.

† *PANICUM PERLONGUM* Nash. Verified by Hitchcock. Fargo, June 24, 1920. Very abundant in one place in low prairie.

† *SPOROBOLUS ASPER* (Michx.) Kunth. Mayville, Aug. 21, 1919; Fargo, Aug. 16, 1920; Steele, Sept. 10, 1920.

FESTUCA VIRIDULA Vasey. Lunell (Am. Mid. Nat. 4: 224 1917) has reported this species from Dunseith. I have examined carefully a specimen received from him ("det. by U. S. Dept. Agr.") but can see no reason why it should not be referred to *F. Hallii* (Vasey) Piper.

BROMUS JAPONICUS Thunb. Fargo, Oct. 1918. Determined by Agnes Chase. All of the specimens referred by Bergman to *B. commutatus* Schrad., and several others not reported, seem to belong here.

† *LOLIUM RIGIDUM DUTHIEI* Hook. Determined by Agnes Chase.

Annual: culms 3 to 4 dm. high, rather stiff, somewhat scabrous above; leaves upright, 5 mm. wide, 1 dm. or more long, glabrous or nearly so; glume about three-fourths as long as the well developed spikelets, equalling the younger or shorter ones; spikelets five- to seven-flowered, the larger 2 cm. long; lemmas 8 to 10 mm. long bearing an awn 7 to 12 mm. long.

Described from a specimen collected July 7, 1919, grown from seeds found in a sample of wheat from the northeastern part of the state. An early maturing annual, not so large as *L. temulentum* L. and quite different in the longer, lanceolate, awned florets. The culms commonly bear a branch from the first node, some of these in the specimen cited being only 1 dm. long with spikes barely protruding. The Milton specimen cited by Bergman under *L. temulentum* belongs here, both it and plants from the 1919 culture having been examined by Mrs. Chase. The plant seems well established in that vicinity as evidenced by these cases, by material received at one or two other times and by seeds found in several samples of wheat.

† *LOLIUM REMOTUM* Schrank. In flax plots, Mandan, 1918.

AGROPYRON

Three species of this genus are of great economic importance in North Dakota. Having had occasion to pay particular attention to these, I find that as a rule, descriptions and figures seem to have been made from immature material, causing certain characters to be overlooked. The spikelets are well figured by Hillman (Bur. Pl. Ind., U. S. Dept. Agr. Circ. 73. 1911). I offer the following descriptions:

A. repens (L.) Beauv. Spikelets distinctly articulated to the rachis (so that they break away readily, with a rounded base), and with a strong transverse impression about 1 mm. above the base. Glumes from half as long to nearly equalling the spikelet, strongly nerved, with about a dozen short teeth on the keel* near the apex which is acute or obtuse, often bearing an awn 2-10 mm. long; margins of the glumes thin and translucent except toward the base where they are indurated, rounded, usually slightly separated exteriorly and quite widely interiorly.

A. Smithii Rydb. Spikelets not articulated (breaking away with a rough base) and only slightly impressed. Glumes about one-half as long as the spikelets, indistinctly nerved and without distinct teeth on the back; margins thin on lower third (meeting exteriorly), abruptly narrowed to a long stiff, acuminate point.

A. tenerum Vasey. Spikelets not articulated and only slightly impressed. Glumes about equalling the spikelets, acute, strongly nerved, the nerves all rough with small teeth, margins nearly straight.

† AGROPYRON DASYSTACHUM (Hook.) Scribn. A specimen from Bottineau, July 7, 1920, is referred here ("form which has been called *subvillosum*") by Hitchcock. Bowman, June, 30 1918, and Kenmare, July 15, 1913, are the same, and I think all the specimens previously referred to *A. molle* (excepting perhaps *Bell 385*) belong here.

† DRYOPTERIS THELYPTERIS (L.) A. Gray. Anselm, *R. A. Shunk*.

† DRYOPTERIS SPINULOSA (Retz.) Kuntze. Another specimen of the same collection as the preceding seems to belong here, as does also Walhalla, *Bergman 2000*.

Since the above was written I have received from Mr. F. P. Metcalf a reprint of an article (Jour. Washington Acad. Sci. 10: 188-198. 1920) in which he reports eighteen additional species for the state. Several of the records suggest the probability of an error of identification or of a difference in interpretation. In reply to my inquiry regarding a few of them Dr. Standley wrote that he has been able to find but one of the specimens, *Rumex Britannica* L. (McLean County), and that that seemed to be correctly determined.

* This is not actually the central nerve, the broader part of the glume being exterior and only one or two nerves on the side next the rachis.